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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,940	02/15/2001	Jihad Boura	SYNER-170XX	2337

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EXAMINER	
SHAHRIER, SHARIF M	
ART UNIT	**PAPER NUMBER**
2664	

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/783,940	BOURA ET AL.	
	Examiner	Art Unit	
	Sharif M Shahrier	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *May 18 2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETALED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

   A person shall be entitled to a patent unless –

   (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1-10, 12-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Holden (US 5,583,861).

   Regarding claim 1, Holden teaches an ATM switching system architecture connectable to a communications network (col 4 ln 37-41).

   The switch contains a plurality of input and output ports connectable to a communications network (Fig. 2). The switch is operable to transmit multicast cells (col 11 ln 23-28). The switch is also operable to receive multicast cells, because multiple switches may be interconnected, allowing an intermediate switch to receive multicast cells from its predecessor.

   Holden teaches a Multi-Priority Buffer Pool Controller (MPBPC) (Fig. 5 elmt **150**). This unit is coupled between the input (Fig. 5 elmt **110**) and output (Fig. 5 elmt **120**) ports of the switching matrix. This is the **output port controller**. Holden further teaches replication of cells using a tree-based cell duplication system (Fig. 13, col 11 ln 64-67,

col 12 ln 1-5). This function is embedded within the switch element, and in conjunction with the output port controller (MPBPC), is operative to replicate the received logical multicast data unit a predetermined number of times for subsequent transmission onto the communication network at the output port. An 8-bit field defining each "multicast group" is maintained within the MULTICAST GROUP BITS block (Fig. 5 elmt 156). This block is a component within the MPBMC, i.e. the output port controller. A multicast group consists of the group of network destinations to which the cell is to be transmitted. An 8-bit field in the routing tag of each transmitted cell determines the multicast group for that cell (col 12 ln 14-16). As part of the cell replication process, for each switch element, the multicast group field determines which switch element outputs upon which a received cell is to be placed in order to get the cell to the desired destinations (col 12 ln 20-23) via the output ports/lines of the switching matrix.

Regarding claim 2, Holden discloses all aspects of the claimed invention set forth in the rejection of claims 1, and Holden further teaches routing tables interconnected to switching elements (Fig. 3). The routing table is a lookup table, which can store information for multicast routes, including entries for each multicast group indicating the number of times to replicate the multicast data. The entries may be reference by the output port controller.

Regarding claim 3, Holden discloses all aspects of the claimed invention set forth in the rejection of claims 2, and Holden further teaches an 8-bit field in the routing tag (header)

of each multicast cell (col 12 ln 14-16). This field determines the "multicast group" for that cell and may be used to reference the entry in the lookup table.

Regarding claim 4, Holden discloses all aspects of the claimed invention set forth in the rejection of claim 1, and Holden further teaches buffer memory (elmt 100) between input port and output port controller (Fig. 5). The buffer memory is used to store a single cell unit of the logical multicast cells (col 6 ln 54-56).

Regarding claim 5, Holden discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 4, and Holden further teaches (Fig. 5) output crosspoint matrix (elmt 120) (**bus**) for interconnecting the buffer memory (elmt 100) to the output controller (elmt 140). The buffer memory can provide a single cell unit of the logical multicast data unit (col 6 ln 54-56) by means of the output crosspoint matrix (**bus**).

Regarding claim 6, Holden teaches an ATM switching system architecture connectable to a communications network (col 4 ln 37-41), for purposes of transferring ATM cells between a plurality of nodes..

The switch contains a plurality of input and output ports connectable to a communications network (Fig. 2). The switch is operable to transmit multicast cells (col 11 ln 23-28). The switch is also operable to receive multicast cells, because multiple switches may be interconnected, allowing an intermediate switch to receive multicast cells from its predecessor.

Holden also discloses "metering" by maintaining a count of enqueued cells within the backpressure controller (col 8 ln 36-53). The "backpressure" controller regulates the transmission of cells in conformance with a predetermined quality of service criteria.

Regarding claim 7, the method of Holden discloses all aspects of the claimed invention set forth in the rejection of claim 6, and Holden further teaches (Fig. 5) a cell buffer pool (elmt 100) memory to store the ATM multicast cells (col 6 ln 54-61). These cells are read from these buffers and sent out to the network for multicast transmission.

Regarding claim 8, the method of Holden discloses all aspects of the claimed invention set forth in the rejection of claim 6 and 7, and Holden further teaches about a buffer memory system with at least one class queue, i.e. a high-priority queue for real-time services such as voice (col 7 ln 4-6).

Regarding claim 9, the combined method of Holden discloses all aspects of the claimed invention set forth in the rejection of claims 6 and 7 above, and Holden further teaches cell buffer pool memory (Fig. 5 elmt 100). Holden also discloses "metering" by maintaining a count of enqueued cells within the backpressure controller (col 8 ln 36-53). It is evident from Fig. 5 that the "meter" contained within the "BACKPRESSURE CONTROL" block (elmt 150) is somewhere in between the input port and the cell buffer pool.

Regarding claim 10, the combined method of Holden discloses all aspects of the claimed invention set forth in the rejection of claims 6 and 7 above, and Holden further teaches cell buffer pool memory (Fig. 5 elmt 100). Holden also discloses "metering" by maintaining a count of enqueued cells within the backpressure controller (col 8 ln 36-53). It is evident from Fig. 5 that the "meter" contained within the "BACKPRESSURE CONTROL" block (elmt 150) is somewhere in between the input port and the cell buffer pool.

Regarding claim 12, Holden teaches an ATM switching system architecture connectable to a communications network (col 4 ln 37-41), for transferring cells between nodes on the communications network.

The switch contains a plurality of input and output ports connectable to a communications network (Fig. 2). The switch is operable to transmit multicast cells (col 11 ln 23-28). The switch is also operable to receive multicast cells, because multiple switches may be interconnected, allowing an intermediate switch to receive multicast cells from its predecessor.

Holden teaches a buffer memory (Fig. 5 elmt 100) for storing a single unit representation of a logical multicast cell, and for providing to the output port for subsequent transmission to the network.

Holden teaches a **priority queue** (Fig. 15 elmt 87) to store cells in a preferential manner. By keeping count of the number of cells in the queue at any given time (col 13 ln 26-28) and combining that with back-pressure signals to a particular data cell source (col 13 ln

30-34) an upper limit on the queue depth is maintained. This sets the upper limit on the predetermined number of times cells are subsequently transmitted onto the network.

Regarding claim 13, Holden discloses all aspects of the claimed invention set forth in the rejection of claim 12, and Holden further teaches Higher Priority Queue (Fig. 15 elmt 87) for storing cells of different priority classes.

Regarding claim 14, Holden discloses all aspects of the claimed invention set forth in the rejection of claims 12 and 13, and Holden further teaches first-in-first-out FIFO cell queues (col 7 ln 43-45).

Regarding claim 15, Holden teaches an ATM switching system architecture connectable to a communications network (col 4 ln 37-41), for the purposes of transferring multicast data between nodes.

The switch contains a plurality of input and output ports connectable to a communications network (Fig. 2). The switch is operable to transmit multicast cells (col 11 ln 23-28). The switch is also operable to receive multicast cells, because multiple switches may be interconnected, allowing an intermediate switch to receive multicast cells from its predecessor.

Holden teaches replication of cells using a tree-based cell duplication method (col 11 ln 64-67, col 12 ln 1-5). This method is used for replicating the cells for the purposes of

multicasting. The replicated cells are transmitted to the network by the output port module (col 3 ln 7-10).

Regarding claim 16, Holden discloses all aspects of the claimed invention set forth in the rejection of claims 15, and Holden further teaches routing tables interconnected to switching elements (Fig. 3). The routing table is a lookup table which can store information for multicast routes, including entries for each multicast group indicating the number of times to replicate the multicast data. The entries may be reference by the output port controller.

Holden also discloses an 8-bit field in the routing tag (header) of each multicast cell (col 12 ln 14-16). This field determines the "multicast group" for that cell and may be used to reference the entry in the lookup table.

Regarding claim 17, Holden teaches an ATM switching system architecture connectable to a communications network (col 4 ln 37-41), for purposes of transferring ATM cells between a plurality of nodes.

The switch contains a plurality of input ports (Fig. 2) capable of receiving multicast cells.

Holden also discloses "metering" by maintaining a count of enqueued cells within the backpressure controller (col 8 ln 36-53). The "backpressure" controller regulates the transmission of cells onto the communications network a predetermined number of times in conformance with a predetermined quality of service criteria.

Regarding claim 18, Holden teaches an ATM switching system architecture connectable to a communications network (col 4 ln 37-41)., for transferring cells between nodes on the communications network.

The switch contains a plurality of input ports connectable to a communications network (Fig. 2) operable to receive multicast cells, because multiple switches may be interconnected, allowing an intermediate switch to receive multicast cells from its predecessor.

Holden teaches a **priority queue** (Fig. 15 elmt 87) to store multicast cells in a preferential manner, in SRAM buffer memory (col 13 ln 15-18).

Holden teaches that multicast cells are transmitted at the output port of the switch in the order of priority, without the need for a transmission scheduler (col 13, ln 20-21).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holden, and in view of Kumaran (US 6,768,744).

Regarding claim 11, the Holden discloses all aspects of the claimed invention set forth in the rejection of claim 6 above.

These references do not explicitly disclose a token bucket.

However, Kumaran teaches metering or traffic conditioning using a leaky bucket (col 3 ln 55-57), which is the same as a token bucket.

In view of this, having the system of Holden and given the teaching of Kumaran, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Holden to incorporate the teachings of Kumaran.

The motivation to combine is because the leaky bucket is a standardized traffic conditioning mechanism, and can regulate the peak rate of multiple classes of ATM cells in accordance with a predetermined quality of service criteria.

Conclusions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharif M Shahrier whose telephone number is (703) 305-870. The examiner can normally be reached on 8:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (703) 305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SMS

RICKY NGO
PRIMARY EXAMINER